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REMARKS

Claims 1-20 are pending.

Claims 1-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,965,473 ("473 patent"). Claim 1 is rejected on the ground that it would have been obvious to modify the 473 patent by selecting the portion of the 473 patent's range that is within the range of claim 1 and thereby arrive at claim 1, since the 473 patent suggests a cyclic regeneration process of contacting spent catalyst with a halogen containing gas which is at least partly formed from recycled regeneration gas from multiple adsorbent beds for removing or adsorbing halogen from the gas and removing or desorbing halogen from the adsorbent, i.e., regeneration of the spent catalyst. This rejection should be withdrawn because the 473 patent does not teach or suggest a process for the regeneration of a hydrocarbon conversion catalyst in the presence of halogen, the process comprising:

- (a) contacting a regeneration inlet stream comprising halogen with catalyst in a catalyst bed to at least partially regenerate the catalyst in the catalyst bed, and withdrawing a regeneration effluent stream comprising halogen from the catalyst bed;
- (b) contacting a first portion of the regeneration effluent stream with adsorbent in a first adsorbent bed, removing halogen from the first portion of the regeneration effluent stream and adsorbing halogen on adsorbent in the first adsorbent bed, and recovering an adsorption effluent stream from the first adsorbent bed;
- (c) contacting a second portion of the regeneration effluent stream with adsorbent in a second adsorbent bed, the adsorbent in the second adsorbent bed having halogen adsorbed thereon, desorbing halogen from the adsorbent in the second adsorbent bed, and withdrawing a desorption effluent stream comprising halogen from the second adsorbent bed; and,
- (d) forming the regeneration inlet stream from at least a portion of the desorption effluent stream.

Applicant's process recovers halogen removed from hydrocarbon conversion catalysts undergoing cyclic catalyst regeneration. Halogen is present in an effluent stream from a catalyst bed undergoing regeneration. A portion of the effluent stream contacts adsorbent to remove halogen. Halogen is removed from adsorbent using another portion of the effluent stream and producing a stream that can be used in regeneration. When this stream containing halogen removed from the adsorbent is used in regeneration, halogen is returned to the catalyst. See page 4, lines 15-21. In one embodiment, Applicant's process is a process for regenerating a hydrocarbon conversion catalyst in the presence of halogen. Part of the halogen-containing effluent of a catalyst bed undergoing regeneration contacts an adsorbent bed, which adsorbs halogen. Another part of the effluent contacts an adsorbent bed to desorb halogen and return halogen to the catalyst. See page 3, lines 17-21. Applicant's process has several advantages. Applicant's process does not use one of the hydrocarbon conversion reactors along with its catalyst to adsorb and desorb the halogen. Applicant's process can improve the regeneration of halogen-containing hydrocarbon conversion catalysts and recover halogen-containing materials that are present during catalyst regeneration. Applicant's process improves the utilization of equipment and catalysts used in hydrocarbon conversion processes such as reforming, isomerization, and dehydrogenation, and improves the efficiency of cyclic catalyst regeneration processes. See page 3, lines 8-16.

The 473 patent discloses a method for recovering chlorine-containing species from the outlet gas of a hydrocarbon conversion process with a cyclic regeneration operation. The outlet gas from an off-stream catalyst bed in which regeneration is occurring is passed to another off-stream catalyst bed which contains spent catalyst and which is maintained at sorption conditions. The spent catalyst particles sorb the chlorine-containing species from the outlet gas. See Abstract of 473 patent. To prevent loss of chlorine-containing materials, the 473 patent uses one of the off-stream catalyst beds. This is an inefficient use of the vessel that contains the off-stream catalyst bed as well as of the catalyst itself, both of which could be better used for promoting hydrocarbon conversion reactions. See page 2, lines 15-22.

The 473 patent does not render claim 1 obvious to a person of ordinary skill in the art because the 473 patent does not teach or suggest, among other things, (b) contacting a first portion of the regeneration effluent stream with adsorbent in a first adsorbent bed, removing halogen from the first portion of the regeneration effluent stream and adsorbing halogen on adsorbent in the first adsorbent bed, and recovering an adsorption effluent stream from the first adsorbent bed; and (c) contacting a second portion of the regeneration effluent stream with adsorbent in a second adsorbent bed, the adsorbent in the second adsorbent bed having halogen adsorbed thereon, desorbing halogen from the adsorbent in the second adsorbent bed, and withdrawing a desorption effluent stream comprising halogen from the second adsorbent bed. Instead, the 473 patent teaches passing the outlet gas from the off-stream catalyst bed in which regeneration is occurring to another off-stream catalyst bed. For all of these reasons, the rejection of claim 1 under 35 U.S.C. §103(a) as being unpatentable over the 473 patent should be withdrawn. The rejection of claims 2-18 under 35 U.S.C. §103(a) as being unpatentable over the 473 patent should be withdrawn for the reasons given in support of claim 1 because they are dependent on claim 1.

Having shown that the 473 patent does not render claims 1-18 obvious to a person of ordinary skill in the art, it can be readily shown that the 473 patent also does not render claim 19 obvious, since the 473 patent does not teach or suggest, among other things, (c) passing a first portion of the regeneration effluent stream comprising chlorine-containing material to a first adsorbent bed containing adsorbent, removing at least about 80 percent of the chlorine-containing material in the first portion of the regeneration effluent stream and adsorbing chlorine-containing material on the adsorbent in the first adsorbent bed, and recovering an adsorption effluent stream from the first adsorbent bed; and (d) contacting a second portion of the regeneration effluent stream comprising chlorine-containing material to a second adsorbent bed containing adsorbent, the adsorbent in the second adsorbent bed having chlorine-containing material adsorbed thereon, desorbing chlorine-containing material from the adsorbent in the second adsorbent bed, and withdrawing a desorption effluent stream comprising chlorine-containing material. For this reason and since, as noted in support of claim 1, the 473 patent teaches passing the outlet gas from the off-stream catalyst bed in which regeneration is occurring to another off-stream catalyst bed, the rejection of claim 19 under 35 U.S.C. §103(a) as being unpatentable over the 473 patent should

be withdrawn. The rejection of claim 20 under 35 U.S.C. §103(a) as being unpatentable over the 473 patent should be withdrawn for the reasons given in support of claim 19 because it is dependent on claim 19.

Claims 1-20 of the subject application are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6,784,132 (the 132 patent), on the ground that claims 1-20 of the subject application are not patentably distinct from claims 1-22 of the 132 patent, because claims 1-20 of the subject application overlap claims 1-22 of the 132 patent. Claim 1 of the 132 patent teaches (b) contacting at least a portion of said regeneration effluent stream with an adsorbent, adsorbing said material on said adsorbent at adsorption conditions, and recovering an adsorption effluent stream comprising said first component and having a reduced concentration of said material relative to said at least a portion of said regeneration effluent stream. Claim 16 of the 132 patent teaches (c) passing at least a portion of said regeneration effluent stream to an adsorption zone containing an adsorbent, adsorbing said material on said adsorbent at adsorption conditions, and recovering an adsorption effluent stream comprising said first component and having a reduced concentration of said material relative to said regeneration effluent stream. None of claims 1-22 of the 132 patent teach or suggest to a person of ordinary skill in the art contacting a part of the halogen-containing effluent of a catalyst bed undergoing regeneration with an adsorbent bed, which adsorbs halogen, and contacting another part of the effluent with an adsorbent bed to desorb halogen and return halogen to the catalyst, as recited in claims 1-20 of the subject application. Therefore, the rejection of claims 1-20 of the subject application under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of the 132 patent should be withdrawn.

Claims 1-20 of the subject application are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6,790,802 (the 802 patent), on the ground that claims 1-20 of the subject application are not patentably distinct from claims 1-22 of the 802 patent, because claims 1-20 of the subject application overlap claims 1-22 of the 802 patent. Claim 1 of the 802 patent teaches (b) contacting a first portion of said regeneration effluent stream with an adsorbent, adsorbing said

material on said adsorbent at adsorption conditions, and recovering an adsorption effluent stream comprising said first component and having a reduced concentration of said material relative to said first portion of said regeneration effluent stream; and (d) forming said regeneration inlet stream from a second portion of said regeneration effluent stream and at least a portion of said desorption effluent stream. Claim 16 of the 802 patent teaches (c) passing a first portion of said regeneration effluent stream to an adsorption zone containing an adsorbent, adsorbing said material on said adsorbent at adsorption conditions, and recovering an adsorption effluent stream comprising said first component and having a reduced concentration of said material relative to said regeneration effluent stream; and (e) forming said regeneration inlet stream from a second portion of said regeneration effluent stream and at least a portion of said desorption effluent stream. None of claims 1-22 of the 802 patent teach or suggest to a person of ordinary skill in the art contacting a part of the halogen-containing effluent of a catalyst bed undergoing regeneration with an adsorbent bed, which adsorbs halogen, and contacting another part of the effluent with an adsorbent bed to desorb halogen and return halogen to the catalyst, as recited in claims 1-20 of the subject application. Instead, claims 1-22 of the 802 patent teach that the second portion of the regeneration effluent stream forms part of the regeneration inlet stream, which contacts or passes to the catalyst bed undergoing regeneration. Therefore, the rejection of claims 1-20 of the subject application under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of the 802 patent should be withdrawn.

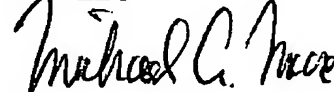
Claims 1-20 of the subject application are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 6,881,391 (the 391 patent), on the ground that claims 1-20 of the subject application are not patentably distinct from claims 1-21 of the 391 patent, because claims 1-20 of the subject application overlap claims 1-21 of the 391 patent. Claim 1 of the 391 patent teaches (b) passing a first portion of the catalyst bed effluent stream comprising halogen to the catalyst bed, and at least partially regenerating at least a portion of the catalyst particles in the catalyst bed and removing at least a portion of the halogen from the catalyst particles in the catalyst bed; and (c) contacting a second portion of the catalyst bed effluent stream comprising halogen with adsorbent in a first adsorbent bed, removing halogen from the second portion of the catalyst bed

effluent stream, and withdrawing from the first adsorbent bed a first adsorbent bed effluent stream. Claim 11 of the 391 patent teaches (b) passing a first portion of the first catalyst bed effluent stream comprising halogen to the first catalyst bed, and at least partially regenerating at least a portion of the catalyst particles in the first catalyst bed and removing at least a portion of the halogen from the catalyst particles in the first catalyst bed; and (d) contacting a second portion of the first catalyst bed effluent stream comprising halogen with adsorbent in a first adsorbent bed, removing halogen from the second portion of the first catalyst bed effluent stream, and withdrawing from the first adsorbent bed a first adsorbent bed effluent stream. Claim 16 of the 391 patent teaches (b) passing a first portion of the coke combustion bed effluent stream comprising chloride to the coke combustion catalyst bed, removing at least a portion of the coke deposits from catalyst particles and removing at least a portion of the chloride from catalyst particles in the coke combustion catalyst bed, the coke combustion catalyst bed operating at a gas inlet temperature of from about 316 to about 649°C; and (c) withdrawing a second portion of the coke combustion bed effluent stream comprising chloride from the regeneration zone, contacting at least a portion of the second portion of the coke combustion bed effluent stream with adsorbent in a first adsorbent bed, the first adsorbent bed operating at an adsorption temperature of from about 66 to about 482°C, removing chloride from the at least a portion of the second portion of the coke combustion bed effluent stream, and withdrawing from the first adsorbent bed a first adsorbent bed effluent stream. None of claims 1-21 of the 391 patent teach or suggest to a person of ordinary skill in the art contacting a part of the halogen-containing effluent of a catalyst bed undergoing regeneration with an adsorbent bed, which adsorbs halogen, and contacting another part of the effluent with an adsorbent bed to desorb halogen and return halogen to the catalyst, as recited in claims 1-20 of the subject application. Instead, claims 1-22 of the 391 patent teach that one of the portions of the bed effluent stream passes to the catalyst bed undergoing regeneration. Therefore, the rejection of claims 1-20 of the subject application under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of the 391 patent should be withdrawn.

In view of the foregoing remarks, the subject application is now believed to be in a condition for an allowance of claims 1-20 and such action is respectfully requested.

Respectfully submitted,

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